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			<div>EXAMINER</div> <div>LAWSON, MATTHEW P</div>	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/531,215

Applicant(s)

BOUTEN ET AL.

Examiner

Matthew P. Lawson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9, 11-24 and 26-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-24 and 26-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: PAJ, NPL

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed 30 April 2007 has been received and entered. Claims 5, 10 and 25 have been cancelled. **Claims 1-4, 6-9, 11-24 and 26-28** are currently pending in this application.

Claim Objections

2. **Claim 26** is objected to because of the following informalities:
 - a. In Claim 1, "where is E_I larger than E_{II} ." should be corrected to read --where E_I is larger than E_{II} --.
 - b. In Claim 26, "the ratio E_I/E_{II} is E_I/E_I is in the range" should be corrected to read --the ratio E_I/E_{II} is in the range--.
 - c. Appropriate correction is required.
3. **Claims 20** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c).

5. Claim 20 recites the broad recitation "equal to or smaller than... 5%," and the claim also recites, for example, "equal to or smaller than... 0.1%," which is a narrower statement of the range/limitation.

6. **Claims 26 and 28** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 26 and 28 are dependent from claims 7 and 14, respectively, which both recite the limitation "wherein the ratio E_I/E_{II} is *larger than 20*." Claims 26 and 28 recite the further limitation "wherein the ratio E_I/E_{II} is *from 2 to 20*." The claimed range is outside the range as disclosed by the parent claims. Therefore it is unclear whether the scope of the claims is directed to subject matter wherein the claimed ratio is larger than 20 or from 2 to 20, i.e. the claimed ratio cannot be both larger than 20 and in the range of from 2 to 20.

Response to Arguments

8. Applicant's arguments with respect to the claims have been considered but are not persuasive.

9. In response to applicant's argument on page 10 that there is no teaching or suggestion regarding the degree of elasticity of the layers in the Hinata reference, the

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examiner submits that it would have been readily known to one of ordinary skill in the art at the time of the invention that the polycarbonate, polyester and polysulfone layers of Hinata have a modulus of elasticity of from 2 to 2.5 GPa. Specifically, for example, the modulus of elasticity of polycarbonate is given in CRC Handbook of Engineering Tables © 2004, Properties of Commercial Plastics, page 3-75, as being from 290 to 325 kpsi, which is equivalent to from about 2.0 to 2.24 GPa. Therefore, the argument is not persuasive, and the Hinata reference has not been withdrawn.

10. In response to applicant's argument that the radius of curvature of 10 cm as disclosed by Wakita (Wakita, col. 11, line 46) is equivalent to a radius of curvature of 100 mm, the examiner has made the requisite correction in the rejection. However, since 100 mm is smaller than the 300 mm as claimed, the rejection has not been withdrawn.

11. In response to applicant's argument on page 11 that instant claims 1 and 13 require the inner layer to be more elastic than the outer layer, the examiner respectfully disagrees. It is noted that the features upon which applicant relies (i.e., that the inner layer is more elastic than the outer layer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

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12. Instant claims 1 and 13 require, in relevant part, a first (and second) layer positioned "substantially coplanar and adjacent to" the first substrate (and display substrate), wherein the first (and second) layer has a larger modulus of elasticity than the first substrate (and display substrate). The claim includes no limitations as to whether the first layer or second layer is an inner later or an outer layer. Additionally, instant claims 6 and 17 recite specifically that the first layer and second layer are nearest to the electro-optical medium, i.e. inner layers. Claims 6 and 17 thereby require the *inner* layer to have a larger modulus of elasticity, or be *less* elastic, than the outer first or display substrate.

13. Additionally, it is noted that the portion of the specification the applicant refers to (Fig. 3; page 7, lines 21-27), recites the inner first and second layers (124 and 126) to have a larger modulus of elasticity, or be *less* elastic, than the first substrate (122) and display substrate (128).

14. In response to applicant's arguments on pages 11-12 against the Hinata, '974, and Wakita references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

15. Specifically, the rejection is based on a flexible flat panel display adapted to bend in a curvature, as taught by the combination of the Hinata, '974, and Wakita references. It would have been obvious to one of ordinary skill in the art at the time the invention

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was made to minimize any variation of the cell gap (i.e. to hold the relative cell gap variation to be zero) in a flexible flat panel display adapted to bend in a curvature, such as one taught by the combination of the Hinata, '974, and Wakita references, since it would have been well known to one of ordinary skill in the art at the time the invention that a variation of the cell gap causes undesirable display effects. Therefore, the argument is not persuasive, and the references have not been withdrawn.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. **Claims 1, 3, 4, 6-8, 16 and 21-24** are rejected under 35 U.S.C. 102(b) as being anticipated by Hinata, US PGPub. No. 2001/0020985 A1 (cited in the previous Office Action).

18. Regarding claims 1 and 6, Hinata discloses a flexible flat panel display comprising:

a. an electro-optical medium (liquid crystal layer (L), a first substrate (4), a display substrate (8b) positioned coplanar with said first substrate, a first spacer

- and a second spacer (6, 7) positioned between said first substrate and said display substrate;
- b. with said first substrate, display substrate, and first and second spacers defining a cell structure for containing said electro-optical medium;
 - c. at least one of said first substrate and said display substrate having a modulus of elasticity smaller than or equal to 1.5 GPa; and
 - d. further comprising a first layer (8a) positioned substantially coplanar and adjacent to said first substrate, wherein the first layer has a modulus of elasticity, E_I , and said first substrate has a modulus of elasticity, E_{II} , where E_I is larger than E_{II} ;
 - e. wherein said first layer (8a) is positioned nearest to the electro-optical medium (i.e. liquid crystal layer (L)) and said first substrate (4) to be furthest from the electro-optical medium (Hinata, Fig. 5).
19. Specifically, the first substrate (4) of Hinata has a modulus of elasticity of between 1×10^4 and 1×10^8 N/m², or between 1×10^{-5} and 0.1 GPa, and preferably 7×10^6 N/m², or 7×10^{-3} GPa (Hinata, ¶ [0026]). The first layer (8a) of Hinata is disclosed to be formed of polycarbonate, polyester or polysulfone (Hinata, ¶ [0070]), which have a larger modulus of elasticity than that of the first substrate of Hinata.
20. Regarding claim 3, claim 1 is anticipated by Hinata as discussed above. Hinata further discloses the electro-optical layer of the flexible flat panel display to comprise liquid crystal material (Hinata, Abstract, etc.)

21. Regarding claims 4 and 12, claim 1 is anticipated by Hinata as discussed above.

Hinata further discloses one or more layers (5, 8a, 11, 16a, 20) positioned substantially coplanar and adjacent to upper and/or lower surface of said first substrate (4) and display substrate (8b) (Hinata, Figs. 5 and 7).

22. Regarding claim 7, claim 1 is anticipated by Hinata as discussed above. Hinata discloses the first layer (8a) to be a plastic film consisting of, for example, polycarbonate, polyacrylate, or polyether sulfone (¶ [0070]). Said first layer as disclosed by Hinata would thereby have a modulus of elasticity, E_I , of from 2 to 2.5 GPa, which would be larger than the modulus of elasticity, E_{II} , of the first substrate (i.e. 7×10^{-3} GPa) (¶ [0026]), and the ratio E_I/E_{II} of the layers as disclosed by Hinata would therefore be over 285, which is larger than 20.

23. Regarding claim 8, claim 1 is anticipated by Hinata as discussed above. Hinata also discloses the first layer (i.e. protective acrylic plate) to have a thickness of 1mm, and the first substrate (i.e. transparent elastic member) to have a thickness of from 0.5 to less than 2 mm (¶ [0066]), thereby disclosing the first layer to have a thickness of from over 50% to 66% of the total thickness of said first substrate and first layer, and anticipating the claimed range of up to 80%.

24. Regarding claim 16, claim 1 is anticipated by Hinata as discussed above. Hinata further discloses the cell structure to define a cell gap between the first substrate and display substrate (Hinata, Fig. 5; ¶ [0023]).

25. Regarding claim 21, claim 1 is anticipated by Hinata as discussed above. Hinata further discloses a plurality of first and second spacers (6) positioned between first and second substrates defining a plurality of cell structures there between (Hinata, Figs. 5, 7).

26. Regarding claim 22, claim 1 is anticipated by Hinata as discussed above. Hinata additionally discloses the first substrate (4) to be transparent and made of silicon rubber, a flexible polymer (Hinata, ¶ [0022]).

27. Regarding claim 23, claim 1 is anticipated by Hinata as discussed above. Hinata further discloses the display substrate (8b) to be transparent and comprise a flexible polymer (i.e. polycarbonate, polyacrylate, or polyether sulfone; Hinata, ¶ [0070]).

28. Regarding claim 24, Hinata discloses a flexible substrate having a modulus of elasticity smaller than or equal to 1.5 GPa. Specifically, Hinata discloses a flexible substrate having a modulus of elasticity of between 1×10^4 and 1×10^8 N/m² (between 1×10^{-5} and 0.1 GPa), and preferably 7×10^6 N/m² (7×10^{-3} GPa) (Hinata, ¶ [0026]).

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29. **Claim 1** is further rejected under 35 U.S.C. 102(b) as being anticipated by Nakanishi, 6,750,844 B2 (cited in the previous Office Action).

30. Regarding claim 1, Nakanishi discloses a flexible flat panel display comprising:

- a. an electro-optical medium (16), a first substrate (18), a display substrate (14) positioned coplanar with said first substrate, a first spacer and a second spacer (15) positioned between said first substrate and said display substrate;
- b. with said first substrate, display substrate, and first and second spacers defining a cell structure for containing said electro-optical medium;
- c. at least one of said first substrate and said display substrate having a modulus of elasticity smaller than or equal to 1.5 GPa; and
- d. further comprising a first layer (19) positioned substantially coplanar and adjacent to said first substrate, wherein the first layer has a modulus of elasticity, E_I , and said first substrate has a modulus of elasticity, E_{II} , where E_I is larger than E_{II} (Fig. 2)

31. Specifically, the first substrate (18) of Nakanishi is formed of, for example, rubber or an elastomer (Nakanishi, ¶ [0046]), which has a modulus of elasticity of less than 1.5 GPa.

Claim Rejections - 35 USC § 103

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

33. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

34. **Claims 2 and 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata.

35. Regarding claim 2, claim 1 is anticipated by Hinata as discussed above. Hinata discloses the first substrate (4) to have a modulus of elasticity of from 1×10^{-5} to 0.1 GPa, as discussed under claim 1 above.

36. Hinata fails to expressly teach, the first substrate to have a modulus of elasticity of from 1.3 to 0.1 GPa.

37. However, the range for the modulus of elasticity overlaps the claimed range at 0.1 GPa.

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38. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the first substrate so as to have a modulus of elasticity of from 1.3 to 0.1 GPa, in view of the first substrate of Hinata, since it has been held that in the case where claimed ranges overlap ranges disclosed by the prior art, a prima facie case of obviousness exists. See MPEP § 2144.05.

39. Regarding claim 18, claim 16 is anticipated by Hinata as discussed above.

40. Hinata fails to expressly disclose the flexible (i.e. bendable) flat panel display to be *adapted to* bend in a curvature while ensuring a relative cell gap variation to be equal to or smaller than 5%.

41. However, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP § 2114.

42. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt, since one ordinarily skilled in the art could easily choose to operate the display of Hinata so as to bend in a curvature while ensuring a relative cell gap variation to be equal to or smaller than 5%.

43. Regarding claim 19, claim 18 is unpatentable over Hinata as discussed above.

44. Specifically, Hinata discloses a cell gap, a first substrate having a thickness, first and second spacers having a distance between them, and a flexible (i.e. bendable) flat panel display (Hinata, Figs. 5, 7, e.g.).

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45. Hinata fails to expressly disclose the relative cell gap variation to satisfy the claimed expression.

46. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the relative cell gap variation satisfy the claimed expression in the device of Hinata, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

47. Regarding claim 20, claim 18 is unpatentable over Hinata as discussed above.

48. Hinata fails to expressly disclose the relative cell gap variation to be equal to or smaller than a relative cell gap variation in the range of from 5% to 0.1%.

49. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure a relative cell gap variation equal to or smaller than 5%, in the device of Hinata, since it is well known in the art to minimize any variation in the cell gap in a liquid crystal display device, and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

50. **Claims 9 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata in view of Wakita et al. (Wakita), US Pat. No. 5,307,190 (cited in the previous Office Action).

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51. Regarding claim 9, claim 1 is anticipated by Hinata as discussed above.

52. Hinata fails to expressly teach the first substrate of said flat panel display to be bendable into a radius of curvature smaller than 300 mm, or a radius of curvature from 200 mm to 0.1 mm.

53. However, Wakita discloses a flexible flat liquid crystal display comprising a flexible thin film substrate, said substrate being bendable into radius of curvature of approximately 10 cm (Wakita, col. 11, lines 43-46), which is smaller than, for example, 300 mm.

54. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a substrate bendable into radius of curvature of smaller than 300 mm, as taught by Wakita, in the flexible flat panel display of Hinata, in order to provide a panel which is free from disorder of orientation even if the panel is subjected to mechanical shock or pressure (Wakita, col. 3, lines 42-45).

55. **Claims 11 and 13-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata, in view of Hinata et al., US Pat. No. 6,812,974 B1 ("Pat. '974," cited in the previous Office Action).

56. Regarding claim 11, claim 1 is anticipated by Hinata as discussed above. Hinata further discloses the first substrate (4) to have a modulus of elasticity of from 1×10^{-5} to 0.1 GPa, as discussed under claim 1 above.

57. Hinata fails to expressly disclose a display substrate having a modulus of elasticity in the range of from 1.3 to 0.1 GPa.

58. However, Pat. '974 discloses a liquid crystal display device comprising a supporting member (i.e. display substrate) (37) of synthetic rubber (Pat. '974, Fig. 5; col. 12, lines 28-47). The synthetic rubber substrate as disclosed in Pat '974 is functionally equivalent to the silicone rubber substrate as disclosed by Hinata, and would therefore have a modulus of elasticity of from 1×10^{-5} to 0.1 GPa.

59. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a transparent display substrate having a modulus of elasticity of from 1×10^{-5} to 0.1 GPa, as taught by Pat. '974, as a substrate in the flexible flat panel display device of Hinata, in order to prevent the formation of a distortion pattern in the liquid crystal device (Pat. '974, Abstract).

60. The references fail to expressly teach the display substrate to have a modulus of elasticity of from 1.3 to 0.1 GPa.

61. However, the range for the modulus of elasticity of the display substrate as taught by the combination of Hinata and Pat. '974 overlaps the claimed range at 0.1 GPa.

62. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the first substrate so as to have a modulus of elasticity of from 1.3 to 0.1 GPa, in view of the display substrate as taught by the combination of Hinata and Pat. '974, since it has been held that in the case where

claimed ranges overlap ranges disclosed by the prior art, a prima facie case of obviousness exists. See MPEP § 2144.05.

63. Regarding claim 13, claim 1 is anticipated by Hinata as discussed above. Hinata further discloses a first layer positioned substantially coplanar and adjacent to a first substrate, wherein the first layer has a modulus of elasticity, E_I , and the first substrate has a modulus of elasticity, E_{II} , where E_I is larger than E_{II} , as discussed under claim 1 above.

64. Hinata fails to expressly disclose a second layer positioned substantially coplanar and adjacent to the display substrate, wherein said second layer has modulus of elasticity, E_{III} , and said display substrate has a modulus of elasticity, E_{IV} , where said E_{III} is larger than E_{IV} .

65. However, Pat. '974 discloses a second layer (22b) positioned substantially coplanar and adjacent to the display substrate (37), wherein the second layer has a modulus of elasticity larger than that of said display substrate. Specifically, Pat. '974 discloses that it is preferable for the supporting member (i.e. display substrate) (37) to be more flexible than the second substrate (i.e. second layer) (22b), i.e. have a modulus of elasticity smaller than that of the supporting member (i.e. display substrate) (Pat. '974, col. 12, lines 43-55).

66. Pat. '974 also discloses the second layer to be a plastic film consisting of, for example, polycarbonate, polyacrylate, or polyether sulfone (Pat. '974, col. 6, lines 38-41). Said second layer as disclosed would thereby have a modulus of elasticity, E_{III} , of

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from 2 to 2.5 GPa, which would be larger than the modulus of elasticity, E_{IV} , of the display substrate as discussed under claim 11 above.

67. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second layer positioned substantially coplanar and adjacent to the display substrate, wherein the second layer has a modulus of elasticity larger than that of said display substrate, as taught by Pat. '974, in the flexible flat panel display device of Hinata, in order to prevent the formation of a distortion pattern in the liquid crystal device (Pat. '974, Abstract).

68. Regarding claim 14, claim 13 is unpatentable over the combination of Hinata and Pat. '974 as discussed above. Hinata further discloses the ratio of E_I/E_{II} to be larger than 20, as discussed under claim 7 above.

69. Hinata fails to expressly disclose the ratio E_{III}/E_{IV} to be larger than 20.

70. However, Pat. '974 discloses the second layer to be a plastic film having a modulus of elasticity of from 2 to 2.5 GPa, as discussed under claim 13 above, and the display substrate to have a modulus of elasticity of from 1×10^{-5} to 0.1 GPa, as discussed under claim 11 above. Pat. '974 thereby discloses the ratio of E_{III}/E_{IV} to be larger than 20, overlapping the claimed ranges.

71. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the ratio E_{III}/E_{IV} to be larger than 20, as taught by Pat. '974, in the flexible flat panel display device of Hinata, in order to prevent the formation of a distortion pattern in the liquid crystal device (Pat. '974, Abstract).

72. Regarding claim 15, claim 13 is unpatentable over the combination of Hinata and Pat. '974 as discussed above. Hinata also discloses the first layer to have a thickness of up to 80% of the total thickness of the first substrate and the first layer, as discussed under claim 8 above.

73. Hinata fails to disclose the second layer to have a thickness of up to 80% of the total thickness of the display substrate and the second layer.

74. Pat '974 discloses a display substrate and second layer as discussed under claim 13 above, but is silent as to the thickness of the second layer.

75. However, it would have been an obvious matter of choice to give the second layer a thickness of up to 80% of the total thickness of the display substrate and second layer, in the liquid crystal display device as taught by the combination of Hinata and Pat. '974, since such a modification would have involved a mere change in the size of the second layer. A change of size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

76. Regarding claim 17, claim 13 is unpatentable over the combination of Hinata and Pat. '974 as discussed above. Hinata further also discloses the first layer to be positioned nearest to the electro-optical medium and the first substrate to be furthest from the electro-optical medium, as discussed under claim 6 above.

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77. Hinata fails to expressly disclose the second layer to be positioned nearest the electro-optical medium and the display substrate to be positioned furthest from the electro-optical medium.

78. However, Pat '974 discloses the second layer (22b) to be positioned nearest the electro-optical medium (32) and the display substrate (37) to be positioned furthest from the electro-optical medium (Pat. '974, Fig. 5).

79. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the second layer positioned nearest the electro-optical medium and the display substrate positioned furthest from the electro-optical medium, as taught by Pat. '974, in the flexible flat panel display device of Hinata, in order to prevent the formation of a distortion pattern in the liquid crystal device (Pat. '974, Abstract).

80. **Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata in view of Nakanishi.

81. Claim 7 is anticipated by Hinata as discussed above.

82. Hinata fails to expressly disclose the ratio E_I/E_{II} to be from 2 to 20.

83. However, Nakanishi discloses a flexible flat panel display device wherein a first flexible substrate is placed coplanar to another flexible substrate, wherein the modulus of elasticity of the first flexible substrate (i.e. E_{II}) is from .001% to 100%, preferably 0.001% to 10%, of the modulus of elasticity of the other flexible substrate (i.e. E_I)

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(Nakanishi, ¶ [0046]), thereby teaching a ratio of the modulus of elasticities E_I/E_{II} to be from about 1000 to 1, and preferably from about 1000 to 10. The range as disclosed by Nakanishi overlaps the claimed range.

84. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a ratio of the modulus of elasticities to be from, for example, from about 1000 to 10, in the device of Hinata, so that the first layer can easily follow the flexing of the first substrate (Nakanishi, ¶ [0046]).

85. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata, as applied to claim 14 above, and further in view of Nakanishi.

86. Claim 14 is unpatentable over the combination of Hinata and '974 as discussed above.

87. Hinata and Pat. '974 fail to disclose the ratio E_{III}/E_{IV} to be from 2 to 20.

88. However, Nakanishi discloses a flexible flat panel display device wherein a first flexible substrate is placed coplanar to another flexible substrate, wherein the modulus of elasticity of the first flexible substrate (i.e. E_{IV}) is from .001% to 100%, preferably 0.001% to 10%, of the modulus of elasticity of the other flexible substrate (i.e. E_{III}) (Nakanishi, ¶ [0046]), thereby teaching a ratio of the modulus of elasticities E_{III}/E_{IV} to be from about 1000 to 1, and preferably from about 1000 to 10. The range as disclosed by Nakanishi overlaps the claimed range.

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89. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a ratio of the modulus of elasticities to be from, for example, from about 1000 to 10, in the device as taught by the combination of Hinata and Pat. '974, so that the second layer can easily follow the flexing of the display substrate (Nakanishi, ¶ [0046]).

Cited Prior Art

90. Any prior art already made of record and not relied upon is considered pertinent to applicant's disclosure.

- i. Patent Abstracts Of Japan Publication No 10-269938 discloses a flat panel display comprising a silicone rubber substrate.

Conclusion

91. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


92. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew P. Lawson whose telephone number is 571-272-9795. The examiner can normally be reached on Monday through Thursday from 8:00am to 6:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms, can be reached at 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew P. Lawson,
Examiner

MPL


ANDREW SCHECHTER
PRIMARY EXAMINER